

DISTRIBUTED ENERGY RESOURCES

Weekly Summary of Events

www.eren.doe.gov/der

January 19, 2001

What's News With DER?

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DOE News

Patricia Hoffman of the Office of DER presented at the **New and Emerging Technologies Conference and Exposition** sponsored by Touchstone Energy in Tuscon, Arizona, on January 11-12. Her presentation was in the Distributed Generation panel, and she covered Distributed Energy Resources - Opportunities and Issues. Denise Swink from the Office of Industrial Technologies also presented in the Manufacturing Session, on energy drivers in the manufacturing sector. Other sessions at the conference included Telecommunications, E-Business, Energy Management, and Agribusiness.

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A **flywheel system** installed at a North Carolina carpet factory has received the coveted R&D100 award for the year 2000. Even momentary voltage sags had caused major disturbances in the carpet production line, which took up to 11 hours to unravel. Duke Power, the local utility, realized that increased reliability of electricity supply was not a cost-effective option. A flywheel developed by **Active Power** and marketed by Caterpillar proved to be the solution. The 250-kW flywheel can support the entire factory load for 40 seconds. This is sufficient for the electricity supply to resume or for an orderly shutdown. This is the first major flywheel application in an industrial setting. The DOE Energy Storage Program is co-funding development of an advanced flywheel with superconducting bearings which will have improved efficiency and cost.

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Debbie Haught of the Office of Distributed Energy Resources, Stephen Waslo of the DOE Chicago Operations Office, and Dave Stinton from Oak Ridge National Laboratory attended the **Canadian Distributed Resources Association**, CANDRA, workshop. The Microturbines and Interconnection Workshop was held on January 16, in partnership with CANMET's Community Energy Technology Centre, Distributed Generation Program. The event explored both the current status of the technology and

institutional issues in regard to their deployment. The workshop also presented a low-cost opportunity to access valuable information and networking in this emerging field. Debbie, Stephen, and Dave went to **Pratt and Whitney Canada** in Montreal the following day to get an update on their ST5 microturbine engine development program. The ST5 is the commercial microturbine that will be marketed by DTE as the ENT4000 - 400 kw machine.

Regional Office News

On January, 18 the **DOE regional office** directors involved in DER had a conference call with Pat Hoffman to discuss coordination and collaborative events. There is a desire to coordinate all of the office's activities and make DER a priority.

Industry News

SkyGen Energy LLC, a unit of Calpine Corp. , said Wednesday it will build and operate an 800 MW, natural gas-fired cogeneration plant in Augusta, Ga. DSM Chemicals North America, which produces caprolactam, a monomer of nylon used in nylon fiber production and nylon 6 will receive an unspecified amount of electricity and steam from the unit. Construction is scheduled to begin in the second quarter. No completion date was disclosed. The plant will use three General Electric 7F gas turbines and a single steam turbine.

Green Power News

The U.S. Department of Energy said January 16 it is building the country's **second-largest wind-power project** at a nuclear testing site in Nevada. The 260-megawatt wind power facility will be constructed at the DOE's Nevada Test Site, 65 miles northwest of Las Vegas. The first phase of the wind farm, consisting of 120 turbines supplying 85 megawatts, is expected to begin generating by the end of the year. The other two phases will be developed by mid-2003. The finished project will consist of 325 wind turbines capable of supplying power to 260,000 people.

Feature of the Week

Record Run by Solid Oxide Fuel Cell Comes To Successful Conclusion

Cogeneration system accumulated more than 16,000 hours of operation

A 100 kW **solid oxide fuel cell (SOFC) cogeneration system** supplied by **Siemens Westinghouse** has successfully completed its two-year planned test program in Westervoort, the Netherlands. The solid oxide fuel cell unit is now known as the world's longest-running high temperature fuel cell.

Since December 1997, the unit accumulated 16,612 hours of operation, proving that the revolutionary concept of an all-ceramic fuel cell is rugged and reliable enough for future commercial power generation. Commercial versions of the technology are now expected to be ready for delivery in 2004.

The Siemens Westinghouse solid oxide fuel cell is a concentric arrangement of electrically-conductive ceramic tubes. Fueled by natural gas, the system generates electricity by a quiet, highly efficient electrochemical reaction. Because no combustion is involved, the system produces almost none of the pollutants commonly associated with conventional power plant boilers. Air emissions from the unit – nitrogen oxides, sulfur oxides, carbon monoxide and volatile hydrocarbons – all measured less than 1 part per million (by volume). For much of its operation in the Netherlands, the system ran virtually unattended; the system was so reliable that technicians from the local utility, NUON, typically checked up on the unit only one day each week.

Perhaps the most impressive – and technically significant – aspect of the fuel cell's long-running performance was its remarkable lack of performance degradation. When the unit was finally shut down, it was providing 110 kW of electric power into the local grid – more than its original nameplate capacity – and showed no signs of diminishing performance. At the point of shutdown, the unit was also sustaining a power generating efficiency of more than 46 percent, well above a conventional combustion-based power plant that typically generates electricity at efficiencies of 33 to 35 percent. It was also providing the equivalent of 65 kilowatts of thermal energy in the form of hot water to the local district heating system.

Siemens Westinghouse plans to relocate the fuel cell and restart it. Based largely on the success of the Netherlands unit, larger solid oxide fuel cells are now being designed and tested. A 220-kW Siemens Westinghouse solid oxide fuel cell-microturbine "hybrid" system is starting up at the University of California-Irvine, and a 1-megawatt (1,000-kW) system is being planned for Fort Meade, Maryland. Siemens Westinghouse has also announced plans for a 1-megawatt unit to be tested in Europe.

A consortium of Dutch and Danish utilities, called EDB/ELSAM, joined with Siemens Westinghouse to host the test program. Funding for the project was provided by the Dutch government agency Novem, the U.S. Department of Energy, and Siemens Westinghouse. Siemens Westinghouse is developing its fuel cell technology under a cooperative agreement with the U.S. Department of Energy's advanced fuel cell research program, which is managed by DOE's Office of Fossil Energy and overseen by the National Energy Technology Laboratory.

Office of Fossil Energy website – Press Release, January 15, 2001

http://www.fe.doe.gov/techline/tl_fuelcell_netherlands.html

Siemens Westinghouse Solid Oxide Fuel Cell Current Demonstrations website

http://www.siemens.com/kwu/fossil/en/products_n_services/sofc/demonstration.htm

CALENDAR OF EVENTS

Date	Event	Location	Other Information
JANUARY 2001			
23-25	Pricing Strategies for Distribution Companies	Orlando, FL	(818) 888-4444; www.informationforecast.com
24-25	Distributed Generation Conference	Denver, CO	www.euci.com ; 303-770-8800
29-30	Harvesting Clean Energy for Rural Development: New Economic Opportunities in Wind, Biomass, Solar and Geothermal Power	Spokane, WA	Curtis Framel DOE/Seattle 206-553-7841
28-31	Air Conditioning, Heating and Refrigeration Exposition	Atlanta, GA	www.agcc.org
FEBRUARY 2001			
8-9	Congestion Management Conference	Denver, CO	www.euci.com ; 303-770-8800
8	NREL Brown Bag Series: Representation of Renewable Energy in Models	Washington, DC	www.nrel.gov/events.html
8	Distributed Energy Workshop for Federal Facility Managers	San Jose, CA	Gail Norby; 303-384-7407 www.eren.doe.gov/femp/techassist/der_resources.html
12-14	CRN Technology Roadmap	Atlanta, GA	Steven P. Lindenberg, 703-907-5842
20-22	Micro Power: Capitalizing on Distributed Energy Resource Strategies for Competitive and Reliable Power	San Francisco, CA	Bob Dixon is giving a talk entitled, "Distributed Energy Resources: What's New at the U.S. Department of Energy."
19-22	4th Industrial Energy Efficiency Symposium	Washington, DC	Sponsored by OIT; OPT will have a booth there; www.oitexpo4.com
22	Steel-Utility Workshop	Washington, DC	Peter Salmon-Cox; 202-586-2380
MARCH 2001			
8	NREL Brown Bag Series: Renewable Energy and Real Options Analysis	Washington, DC	www.nrel.gov/events.html
20-24	Distributed Generation Conference	San Diego, CA	www.powerin.org
21-23	5th Annual Distributed Generation and On-site Power Conference	New Orleans, LA	Pat Hoffman to give keynote address; www.dist-gen.com
APRIL 2001			
2-3	Business Communications Company's 1 st Fuel Cell Conference	San Antonio, TX	EERE representative to speak; www.buscom.com
23-25	Intertech's Fifth International Conference on Distributed Power	Washington, D.C.	Hugh Olmstead; olmstead@intertechusa.com ; 207-281-9606

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MAY 2001			
1-3	Industrial Energy Technology Conference	Houston, TX	jim@esl.tamu.edu
9-10	Energy Management Conference	San Diego, CA	Sponsored by FEMP; www.aeecenter.org
30-31	Fuel Cells Codes & Standards Summit V	College Park, MD	ronald.fiskum@ee.doe.gov
JUNE 2001			
3-7	WindPower 2001	Washington, DC	www.awea.org/conference
AUGUST 2001			
29-Sep 3	IEEC Integrated Energy Efficiency Congress	Cleveland, OH	Sponsored in part by FEMP; www.aeecenter.org
OCTOBER 2001			
24-26	World Energy Engineering Congress	Atlanta, GA	www.agcc.org